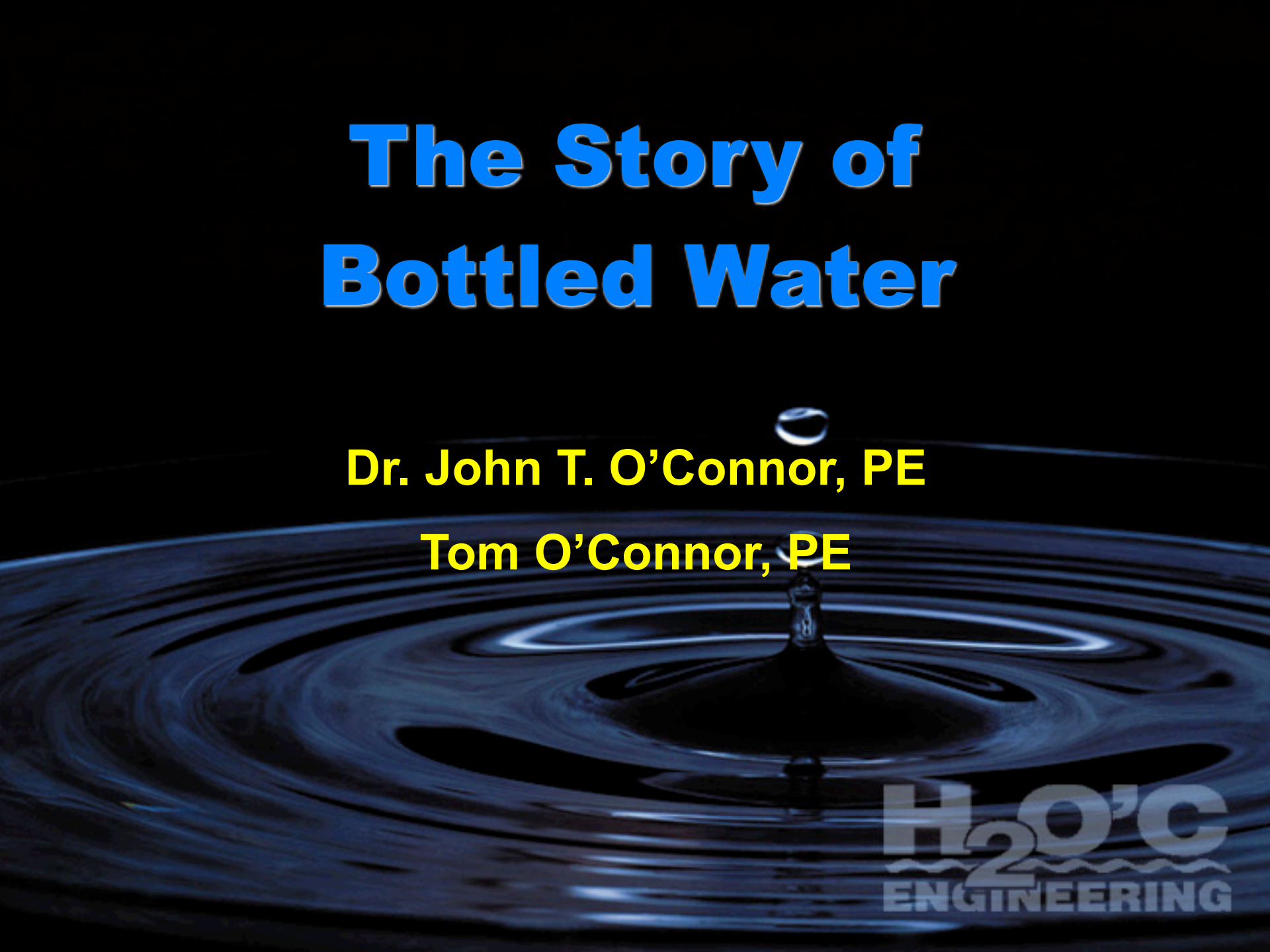
The Story of Bottled Water

Dr. John T. O'Connor, PE

Tom O'Connor, PE

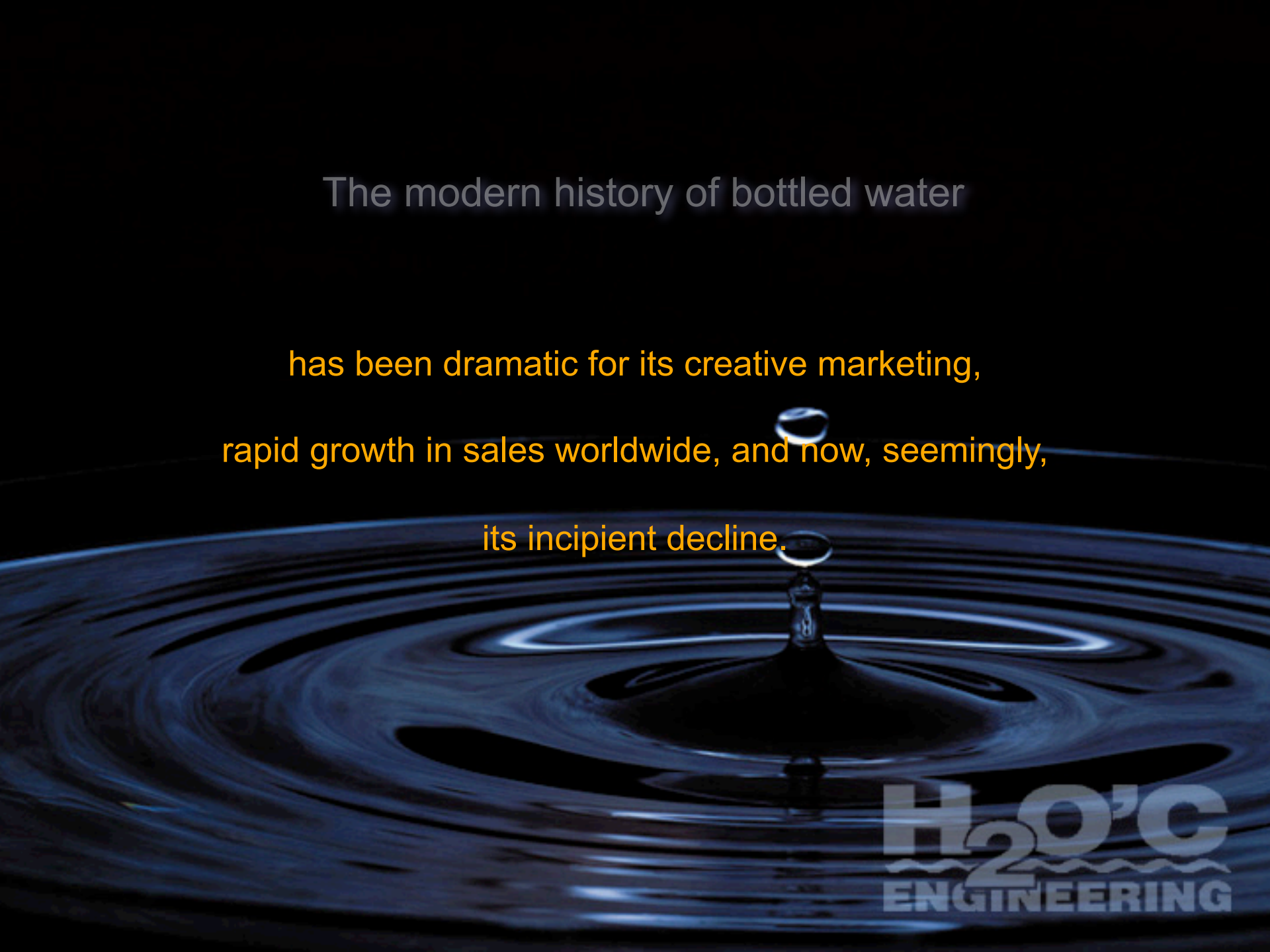


The modern history of bottled water

has been dramatic for its creative marketing,

rapid growth in sales worldwide, and now, seemingly,

its incipient decline.



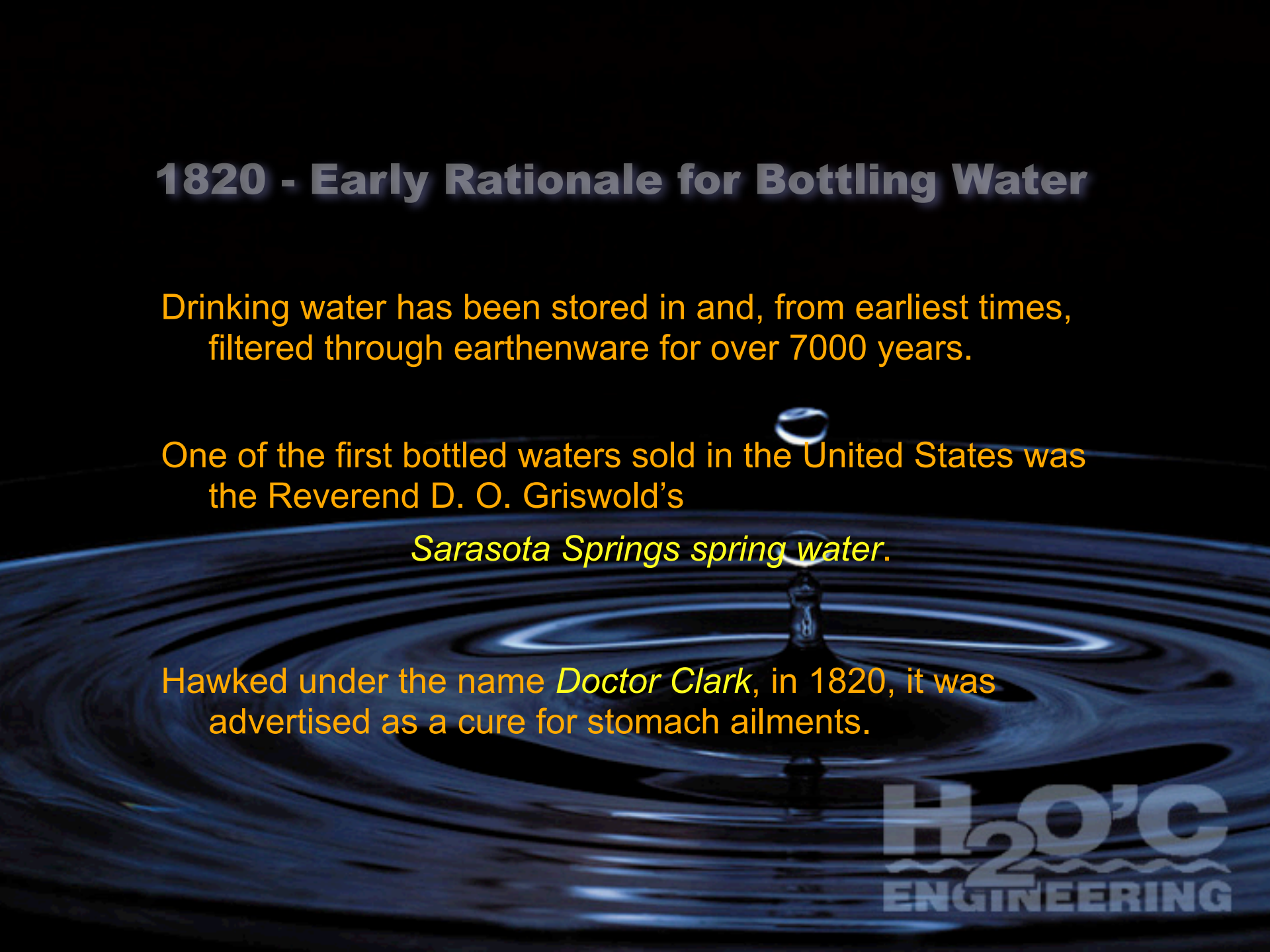
1820 - Early Rationale for Bottling Water

Drinking water has been stored in and, from earliest times, filtered through earthenware for over 7000 years.

One of the first bottled waters sold in the United States was the Reverend D. O. Griswold's

Sarasota Springs spring water.

Hawked under the name *Doctor Clark*, in 1820, it was advertised as a cure for stomach ailments.



5,000 B.C.E.

Earthenware for water
sedimentation
filtration
storage

Middle East

1845 C.E.

Hiram Ricker's springwater as cure for kidney ailments

Poland Spring, Maine

1845 - Good for What Ails You!

The first drinking water to become widely available in the U.S. was Hiram Ricker's spring water which was sold as a cure for kidney ailments.

Hiram's water was bottled in *Poland Spring, Maine* as early as 1845.

Available locally in pottery jugs, three gallons sold for 15 cents.

1960 - Colored Glass Bottles

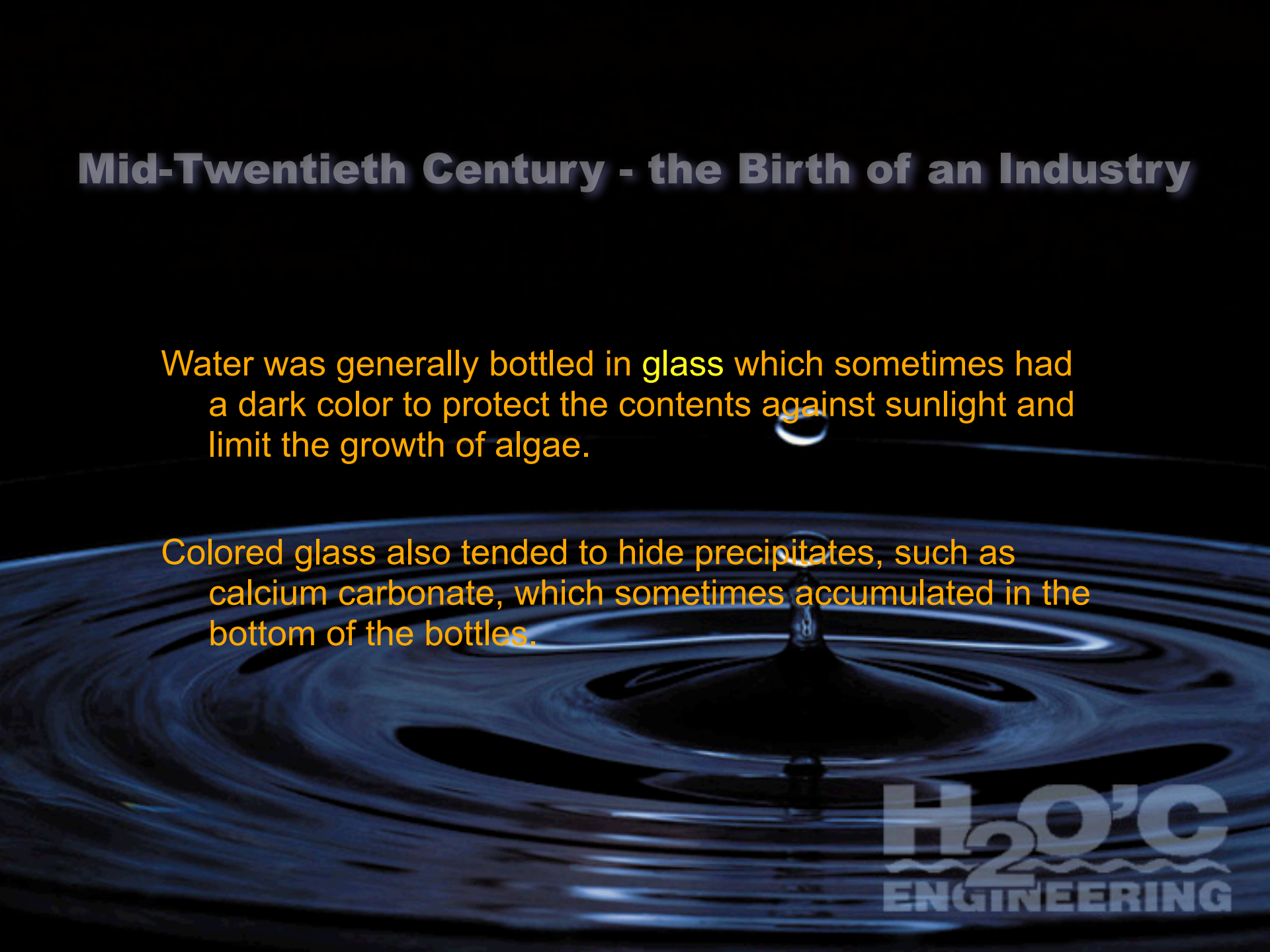
Dark colored glass to protect against sunlight, algae.

$CaCO_3$ precipitates

Mid-Twentieth Century - the Birth of an Industry

Water was generally bottled in glass which sometimes had a dark color to protect the contents against sunlight and limit the growth of algae.

Colored glass also tended to hide precipitates, such as calcium carbonate, which sometimes accumulated in the bottom of the bottles.



PET saves on shipping

Non-returnable containers

1968 Dupont

polyethylene terephthalate

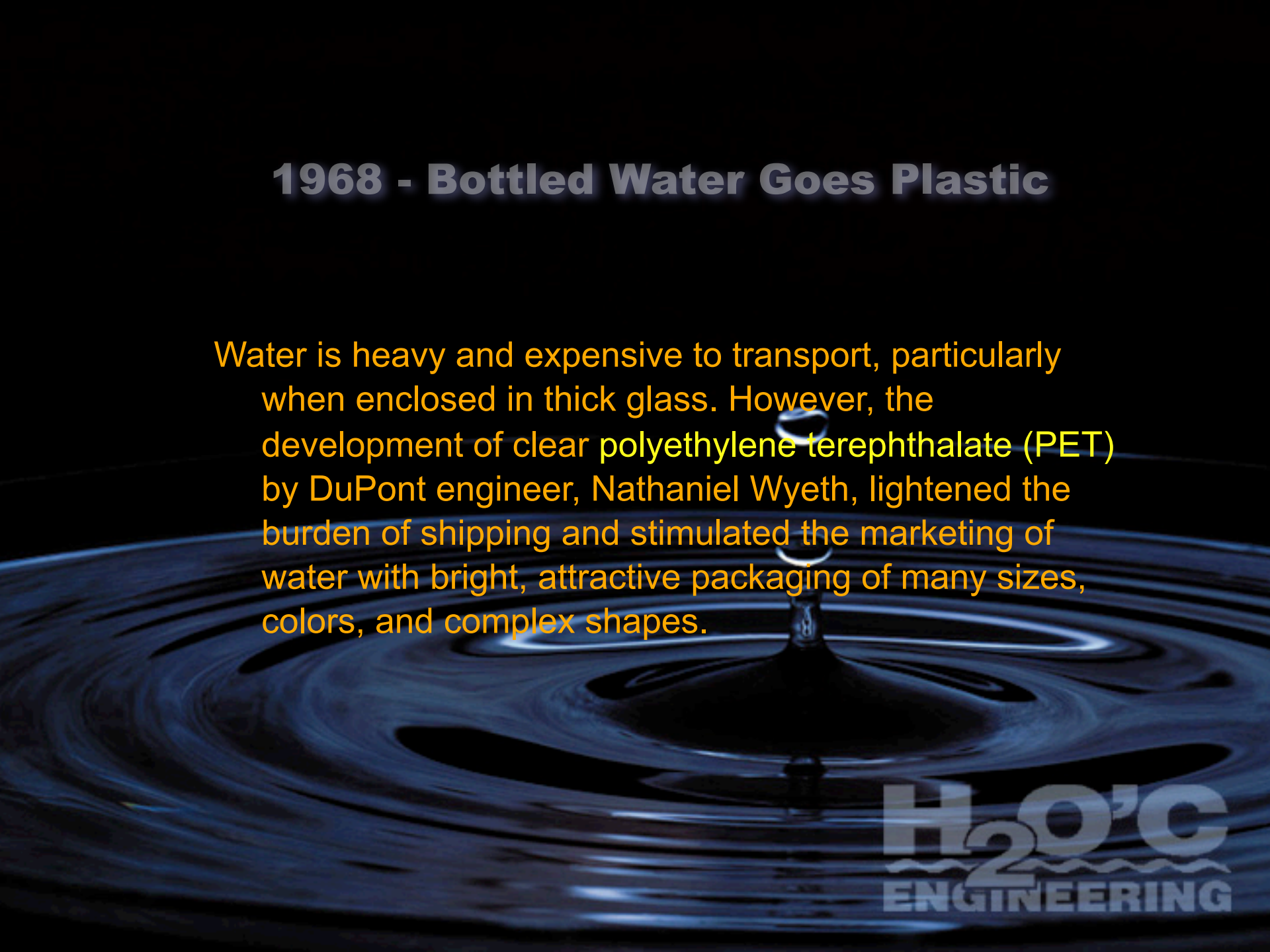
PET invented by
Nathaniel Wyeth
(brother of painter Andrew)

1 kg of PET
requires about
2 kg of oil
and produces
3 kg of CO_2

H2O'C ENGINEERING

1968 - Bottled Water Goes Plastic

Water is heavy and expensive to transport, particularly when enclosed in thick glass. However, the development of clear polyethylene terephthalate (PET) by DuPont engineer, Nathaniel Wyeth, lightened the burden of shipping and stimulated the marketing of water with bright, attractive packaging of many sizes, colors, and complex shapes.



1977 Perrier

introduces the fashion accessory for yuppies: its bowling-pin-shaped, green bottle

Bottle Sizes

(and water contents)

begin to decrease

H2O'C ENGINEERING

1977 - The Miracle of Marketing: Perrier Ice Cubes for Eskimos

Perrier entered the U.S. market with a distinctive green, pin-shaped bottle. Promoted in an imaginative nationwide marketing program, its sales reached $20 million in its first year and tripled in the following year.

As a *'fantasy gift'*, Neiman-Marcus reportedly offered a swimming pool filled with Perrier.

Downsizing - with style

Flavored Canadian Water


Ireland
England
Belgium
Italy
KERRY Spring
Still
Irish Mineral Water
THE ORIGINAL BRITISH SPA WATER
HARROGATE SPA
STILL SPRING WATER
BLÜ botol
16.9 fl oz
500 mL
Natural Spring Water
ACQUA PANNA
FROM THE HILLS OF TUSCANY
ACQUA PANNA
Acqua Oligominerale
Bottled at the source in Italy
S.PELLEGRINO 500 ml
NATURAL MINERAL WATER


Germany
France
Europe
Yugoslavia
GEROLSTEINER
SPRUDEL
NATURALLY SPARKLING
Mineral Water
Contains Natural Calcium (8% OF THE DV)
Product of Germany
LOW SODIUM
ONE LITER - 33.8 FL.OZ. (QT., 1.8 FL.OZ.)
evian
natural spring water from the French Alps
IMPORTED • NON CARBONATED
1 LITER - 33.8 FL. OZ. (1 QT - 1.8 FL. OZ.)
EUROPEAN SPARKLING MINERAL WATER
NATURAL
Gold Medal Winner, Brussels
CHAPELLE
EUROPEAN SPARKLING MINERAL WATER
NATURAL
23 FL OZ (1 PT 7 OZ)
Naturally Carbonated Natural Mineral Water
miral
1500 ML
(50,7 FL.OZ.)
Radenska

1978 - The Bottle as Fashion Statement

Bottled in France since 1826 for its medicinal properties, Evian surfaced in 0.5 litre PVC bottles in 1969.

Thereafter, Evian launched a sculpted bottle for the *Winter Olympic Games at Albertville*.

In 1992, Evian premiered the launch of a PET bottle which was *'completely collapsible'*, presumably to save landfill space.

Evian Millennium limited edition bottle (1999) marked the millennium.

The *Evian Nomade (2000); Evian Affinity (2001)*; Evian 1 litre

Marketing Poland Spring

Ride! Rock! Choose! Win! Movies! DVD!

-- and, oh yes! water!

Now brought to you by Nestlé, the Swiss Company that sells water throughout North America!

Enjoy your ride!

H2O'C ENGINEERING

U.S. - Arrowhead

Nestlé Mountain Spring Water

"It's Better Up Here!"

Despite advertising illusions,

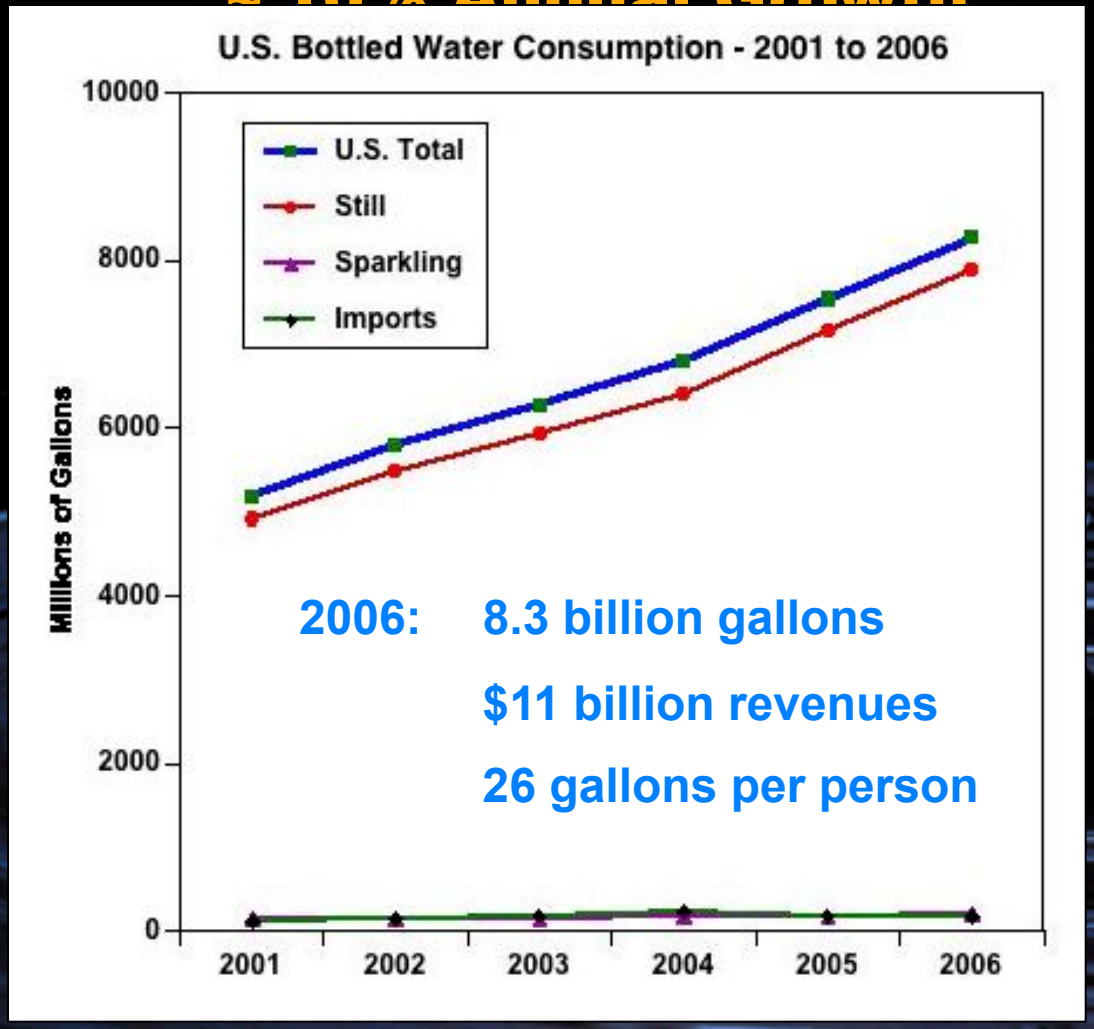
most of the water sold in the U.S. is groundwater;

25% is derived from municipal water sources.

H2O'C ENGINEERING

U.S. Bottled Water Consumption

≈ 10% Annual Growth



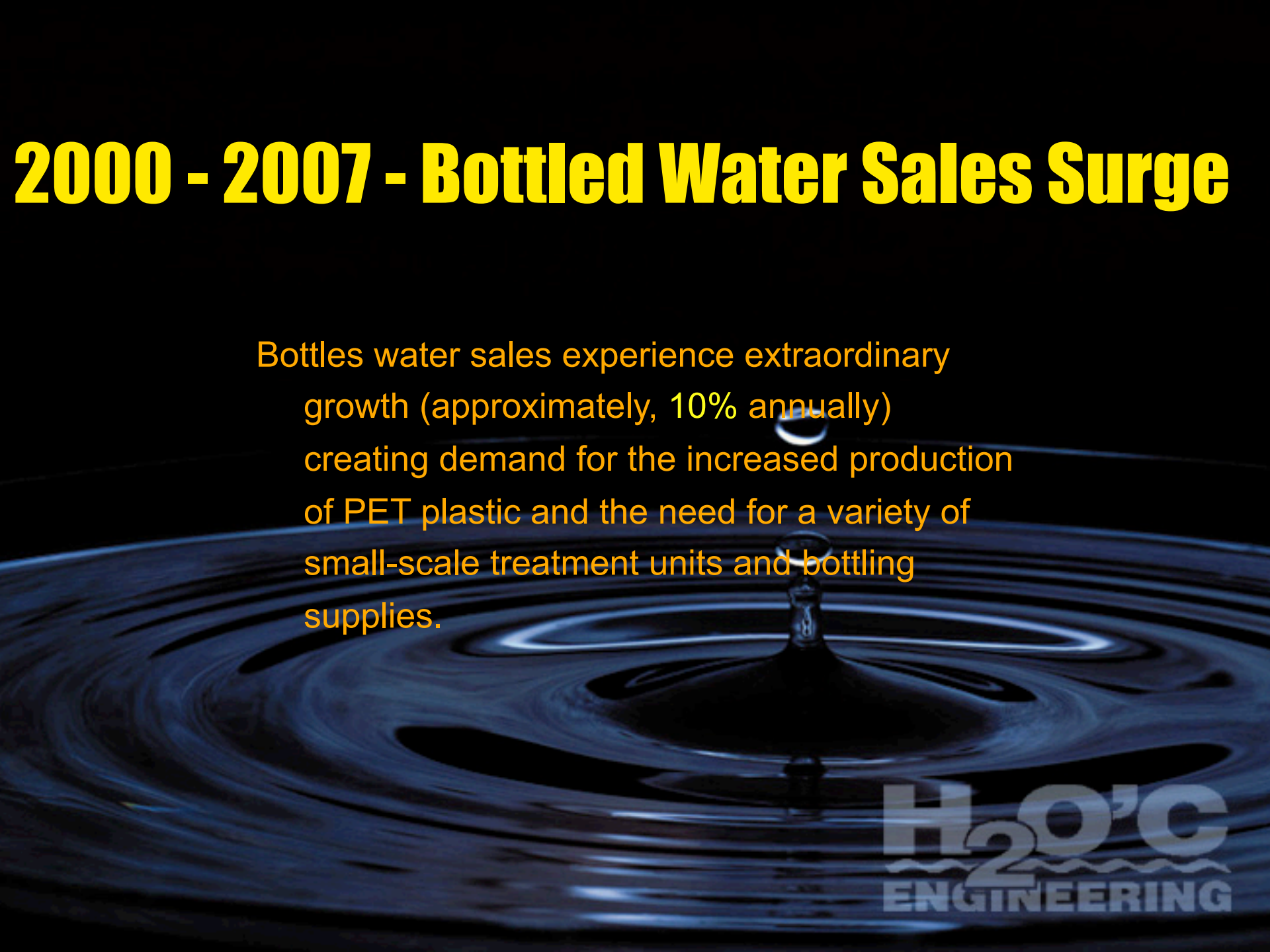
Suppliers to Bottlers

Activated Carbon Products
Bottle Closures
Bottling Equipment
Carry Handles
Color Label Printers
Computer Services, Software
Coolers; Chillers
Labels and Packaging
Oxygen Related Products
Ozone, UV, R.O. Systems
Packaging (PET)
Plastic Bottle Equipment
Process Technology
Trucks and Transportation
Water Sources (Wells)
Water Treatment Plants

H2O'C ENGINEERING

2000 - 2007 - Bottled Water Sales Surge

Bottles water sales experience extraordinary growth (approximately, 10% annually) creating demand for the increased production of PET plastic and the need for a variety of small-scale treatment units and bottling supplies.



Annual Bottled Water Consumption

billion gallons

United States 7.5

Mexico	5.0
China	3.4
Brazil	3.2
Italy	2.9
Germany	2.8
France	2.2
Indonesia	2.0
India	1.6

Bottled Water Consumption, Gallons Per Capita

Italy	51
United Arab Emirates	48
Mexico	47
Belgium-Luxembourg	42
Spain	39
France	37
Germany	34
Lebanon	28
Switzerland	27
United States	26
Cyprus	26
Saudi Arabia	25
Czech Republic	24
Portugal	22
Slovenia	22
Global Average	7

H2O'C ENGINEERING


Arkansas
Missouri
Maine
Yugoslavia
NATURAL SPRING DRINKING WATER
Famous Since 1871
Mountain Valley Water
from HOT SPRINGS, ARK. 71901
50.7 FL. OZ. (1.5 LITER)
RETURN BOTTLE FOR DEPOSIT REFUND
EXCELSIOR SPRINGS
NATURAL MINERAL WATER
HIGH CALCIUM - LOW SODIUM
NON-CARBONATED
1.5 LITER • 50.7 FL. OZ. (1 QT. 18.76 OZ.)
NON-CARBONATED
Poland Spring
SINCE 1845
NATURAL SPRING WATER
1.5 LITERS
SODIUM-FREE
50.7FL.OZ.
(1QT., 1PT. 2.7OZ.)
Natural Mineral Water
radin
1500 ML
(50,7 FL.OZ.)
Radenska

St. Louis Kansas City Chicago Okla. City

Chicago! ‘Great Lake’ or ‘Deep Artesian’!


8 ounces
MORE
THAN 1 GALLON
CRYSTAL PURE FROM WISCONSIN
GLACIAL WATER
BUFFALO DON'S
PURE ARTESIAN
DRINKING WATER
Contains less than 1 mg. sodium per 8 oz. serving
SALT FREE
136 FL.OZ. (ONE GAL.+8 OUNCES)
BUFFALO DON'S ARTESIAN WELLS, Ltd., Mishicot, WI 54228 U.S.A.
KANDIYOHI
Premium Water
DRINKING
WATER
Prepared by distillation
Selected minerals added for taste
INGREDIENTS: DISTILLED WATER, CALCIUM CHLORIDE, POTASSIUM BICARBONATE, MAGNESIUM CHLORIDE.
ONE GALLON (3.79 L)
Kandiyohi Bottled Water Co.
Willmar, MN 56201
An IBWA Bottler Member
0 13073 54204 9

8 ounces more than 1 gallon ?

Gallon jug ruptured releasing all of

Buffalo Don's

Crystal Pure

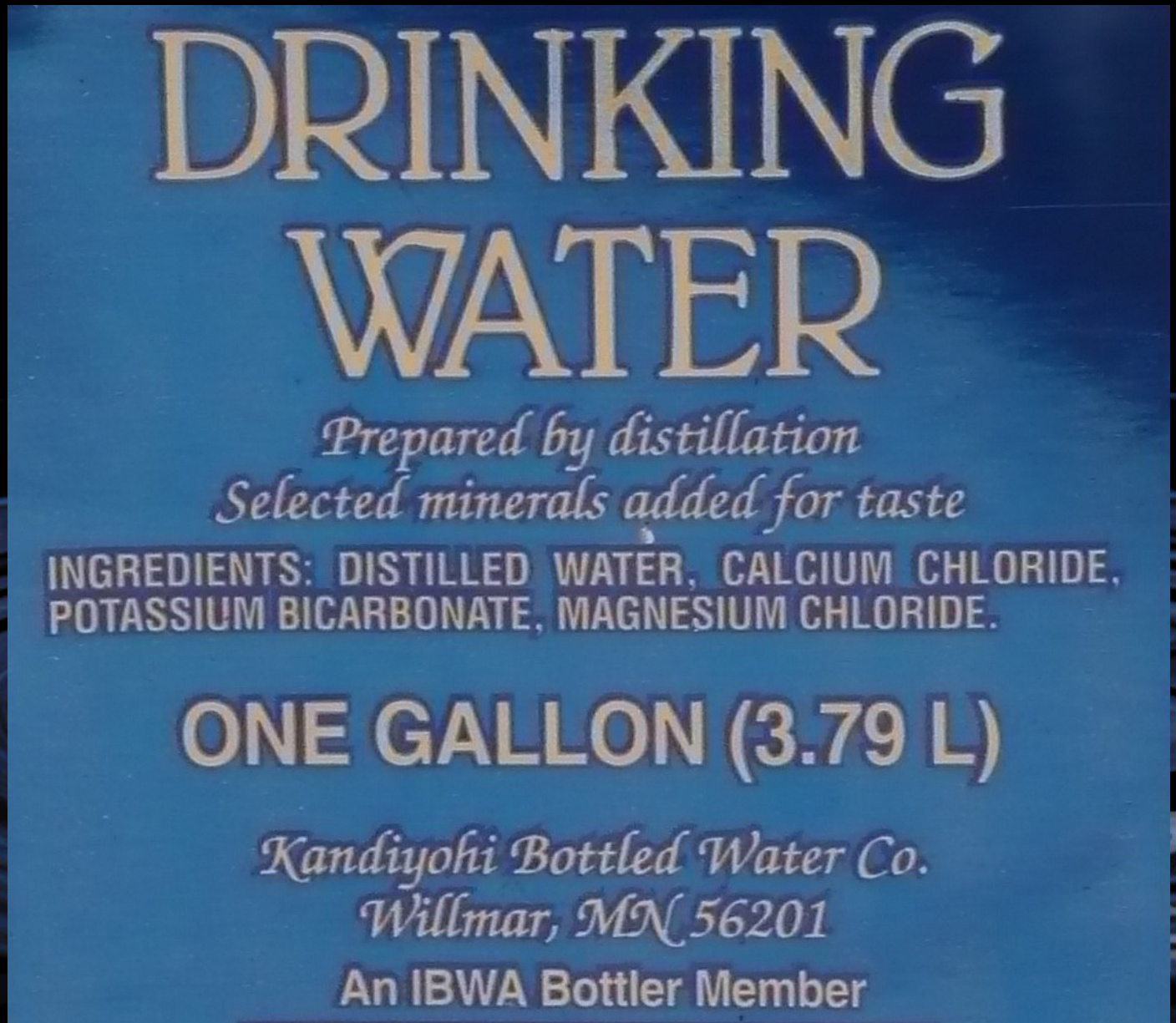
Artesian Glacial Water

onto my bookshelf

H2O'C ENGINEERING

Minnesota Distilled Water

-- with tasty salts added back in!



“Never Hit the Ground …”

“…proud purveyor of fresh squeezed cloud juice.”

‘jes don’ get no bettern’ that!

Who reads labels? You, it seems. Maybe you’re trying to find out if this is real rainwater. Well, it is. I harvest it straight from the source—clouds. That means it never hit the ground, a claim no other bottled water in America can make. Maybe you want to know if I filter it. Oh, yeah. We’re talking the ultimate in purification—reverse osmosis. Maybe you’re wondering how it tastes? To find that out, it’s time to stop reading and take a sip.

RICHARD HEINICHEN
Proud Purveyor of fresh squeezed Cloud Juice™, the Original Rainwater.

RAINWATER
RICHARD’S
IT’S REAL RAIN!
MADE BETWEEN HEAVEN AND EARTH
OVER DRIPPING SPRINGS, TEXAS
PURIFIED DRINKING WATER 16 FL OZ

NUTRITION FACTS
Serving Size 8 fl oz (240 ml)
About 2 Servings per container

Amount Per Serving	
Calories 0	
% Daily Value*	
Total Fat 0g	0%
Sodium 0mg	0%
Total Carbohydrates 0g	0%
Protein 0g	0%

*Percent Daily Values are based on a 2,000 calorie diet.

0 57670 11116 3

GO TEXAN.

Captured and Bottled at Tank Town
2770 Highway 290 West, Dripping Springs, Texas 78620
www.rainwater.org or www.rainwatercollection.com

H2O’C ENGINEERING

Private Label Bottled Water

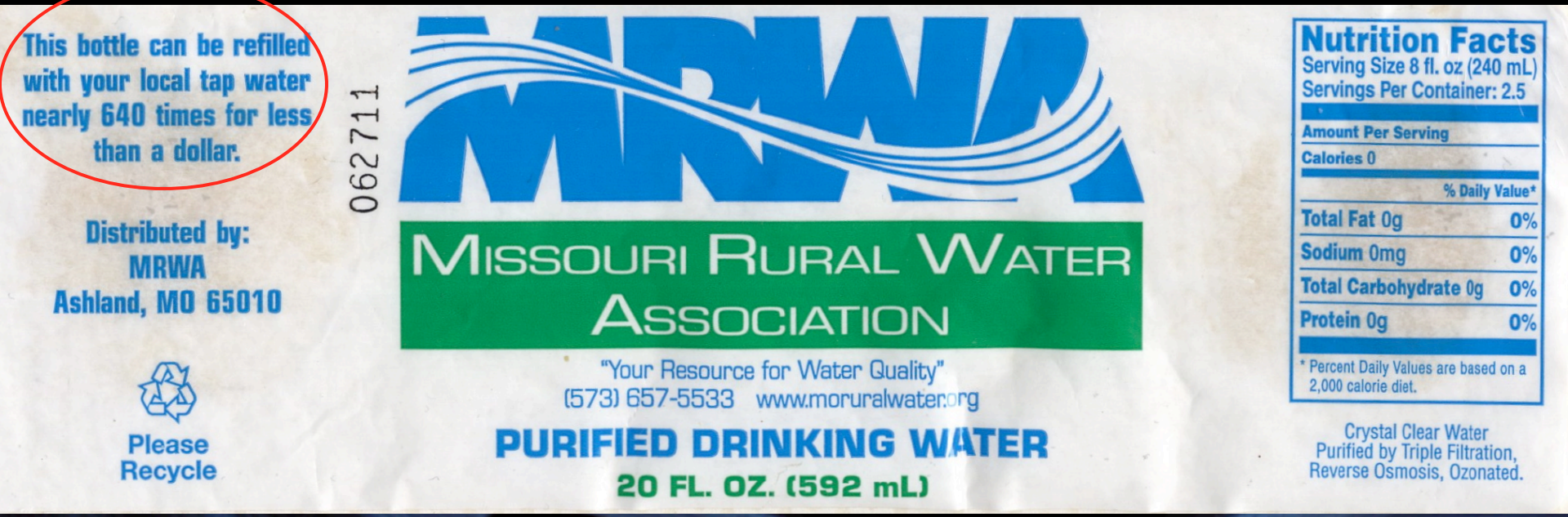
your organization's name and logo

34 cents per bottle when ordering pallet quantities!

H2O'C ENGINEERING

Missouri Rural Water

"No Protein!"



Local Brands: for truckers and college women

Grain Valley Truck Stop

816-443-2027

Caution: This is not beer!

Conoco GV SUBWAY

SODIUM FREE

PURIFIED BY REVERSE OSMOSIS

Nutrition Facts
Serving Size 8 fl oz (240ml)
Servings Per Bottle 2.1

Amount Per Serving	
Calories 0	
% Daily Value	
Total Fat 0g	0%
Sodium 0mg*	0%
Total Carbohydrate 0g	0%
Protein 0g	0%

*Percent Daily Values are based on a 2,000 calorie diet.

please recycle OZONATION

Bottled by
THE WATER DEPOT Inc.
1150 W. 151st St - Suite B
Olathe, KS 66061
www.thewaterdepot.com
913-782-7277
PURIFIED WATER 20oz. (591 mil)

Won't make you fat!

www.stephens.edu

STEPHENS COLLEGE

Pure Drinking Water

Nutrition Facts
Serving Size 8 Fl. Oz. (200mL)
Servings Per Bottle 2

Amount Per Serving	
Calories 0	
Total Fat 0g	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Protein 0g	

*Percent Daily Values are based on a 2000 calorie diet.

Bottled by Crystal Springs, Inc.
El Reno, OK 73036
Consumer Inquiries Please Call 405-262-0237
www.crystalspringsok.com
.5 LITER (16.9 FL. OZ.)

100% RECYCLABLE

Water source approved by the State of Oklahoma Department of Public Health Permit Number 0049051

BOTTLED IN THE U.S.A.

Regulation of Bottled Water Quality

Proposed (2007) California *Water Quality Notice*:

Make available annual *consumer confidence report*

Label to indicate *source*; provide *contact information*

International Bottled Water Association (IBWA):

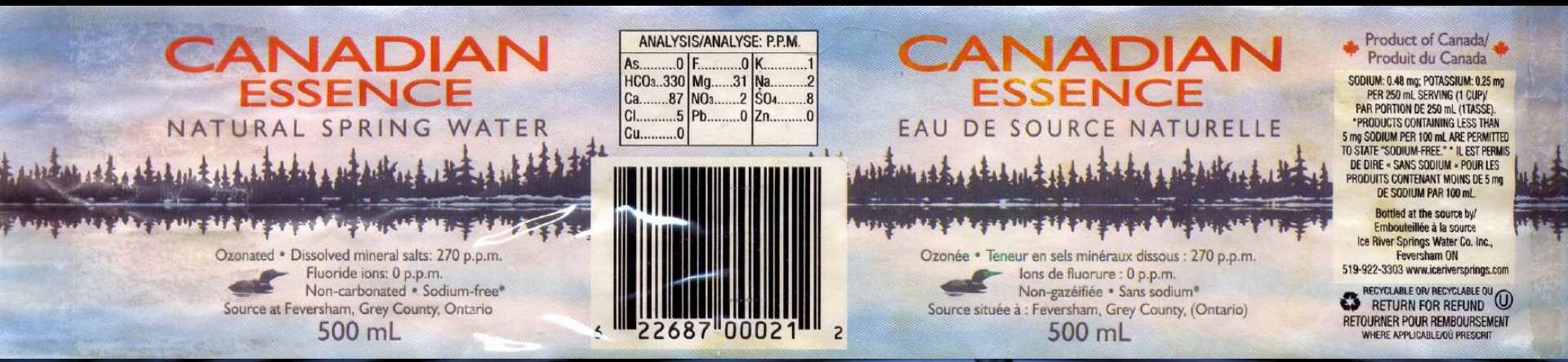
Opposed to onerous California legislation

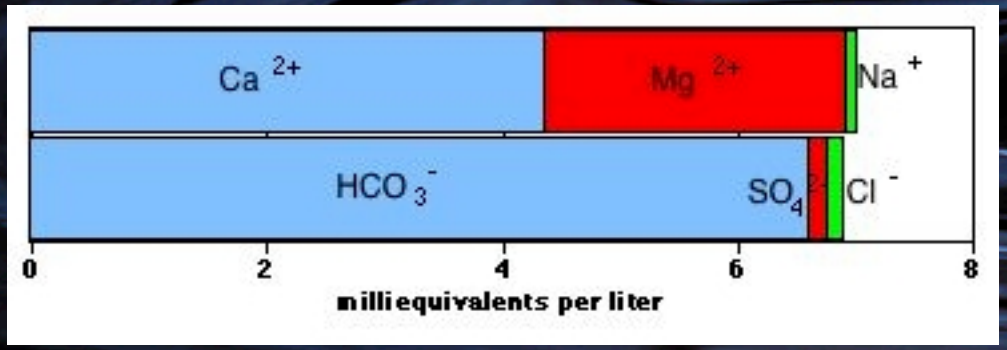
Pepsi spokesman said anyone can find out the true source of ***Aquafina*** by calling the 800 number on the bottle top.

H2O'C ENGINEERING

Produit du Canada

Cold water tastes good! It's cold in Canada!
Canadian water tastes good!





The Canucks actually provided water quality data on their label

-- in two languages. **Olé!**

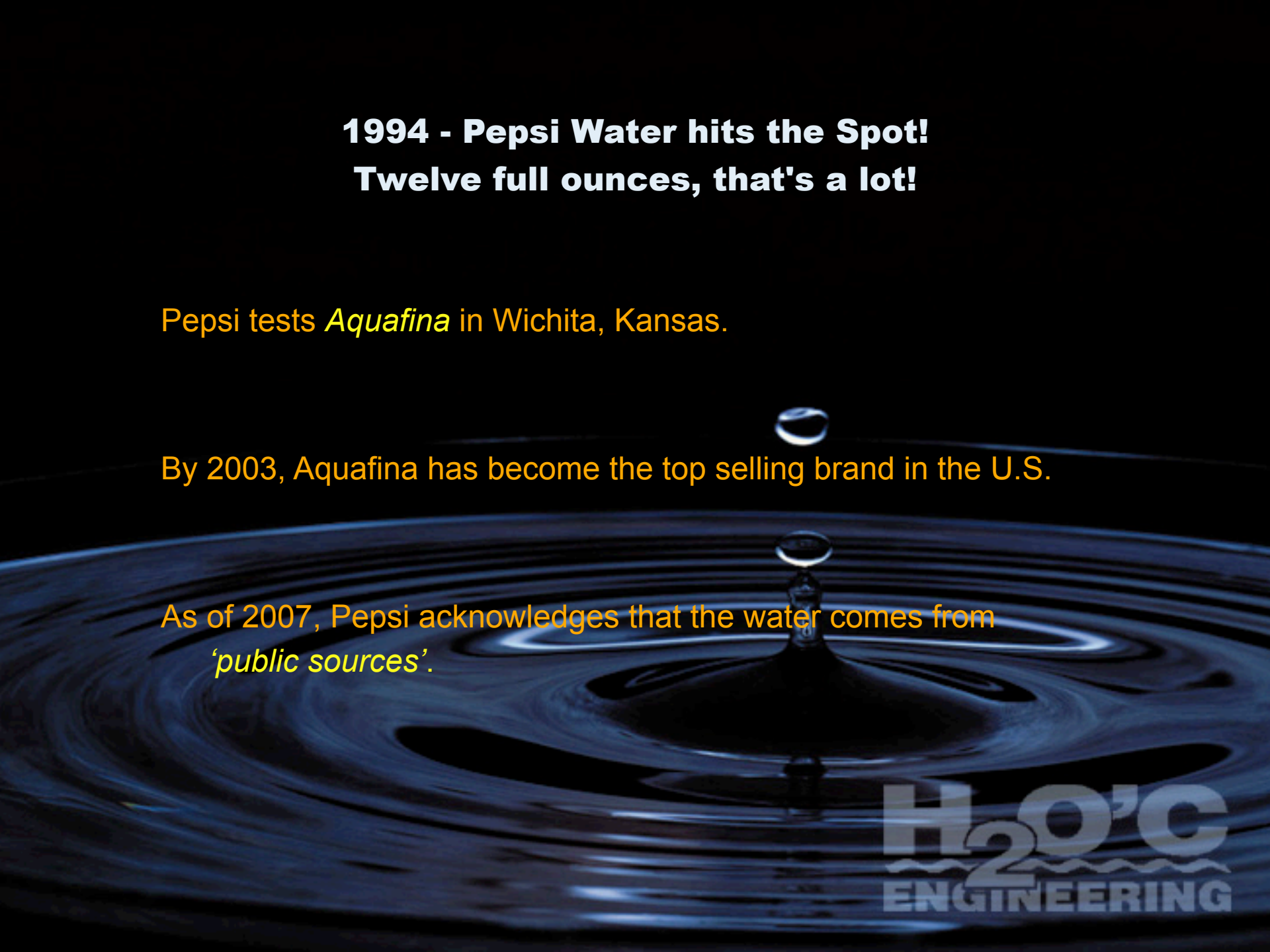
No lake here! The data indicate a moderately hard groundwater.

1994 - Pepsi Water hits the Spot!
Twelve full ounces, that's a lot!

Pepsi tests *Aquafina* in Wichita, Kansas.

By 2003, Aquafina has become the top selling brand in the U.S.

As of 2007, Pepsi acknowledges that the water comes from *'public sources'*.



Coca-Cola Co-opts AWWA

The Coca-Cola Company
2007 Water For People Golf Event
Presented by RE/MAX International, Inc.

"Did you know **The Coca-Cola Company** offers more than 400 brands in over 200 countries?

There are 193 recognized countries in the world!

"Well, we do!

"From ***Inca Kola***, a soft drink found in North and South America, and ***Samurai***, an energy drink available in Asia; to ***Vita***, an African juice drink, and ***BonAqua***, a water found on 4 continents, our product variety spans the globe!"

1999 - Coca-Cola discovers water sales potential goes beyond worldwide with marketing

Coca-Cola introduces *Dasani* which becomes second largest selling brand in the U.S.

While Dasani bombs as *'bottled spunk'* in Great Britain, Coca-Cola currently boasts sales of 400 varieties of bottled water in 200 countries worldwide.

H2O'C ENGINEERING

The Coca-Cola Company

The Coca-Cola Company Virtual Vender

Brand Name: BonAqua/BonAqa

Drink Type: Water

BonAqua/BonAqa: BonAqua provides the pure taste of crystal water. Known as BonAqa in some locations, this refreshing product is available carbonated or noncarbonated, depending on location.

Available in the following flavors: Apple, Apple Mint, Cranberry Grapefruit, Guaraná, Lemon, Lemon Lime, Lime, Lingonberry, Lychee, Orange, Pear, Raspberry, Strawberry, Tangerine and Unflavored.

Available in the following locations: Australia, Azerbaijan, Belarus, Belgium, Brazil, Cape Verde, Comoros, Czech Republic, Democratic Republic of Congo, Ecuador, Estonia, Finland, Germany, Ghana, Guinea-Bissau, Hong Kong, Hungary, Iceland, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Lesotho, Liberia, Lithuania, Macau (Macao), Macedonia, Mauritania, Mayotte, Moldova, Mongolia, Morocco, Namibia, Netherlands, Norway, Peru, Poland, Russia, Slovakia, South Africa, Spain, Sweden, Taiwan, Tunisia, Turkmenistan, Ukraine, Uruguay and Uzbekistan.

‘Unflavored’ is a flavor?

H2O’C ENGINEERING

The Coca-Cola Company

The Coca-Cola Company Virtual Vender

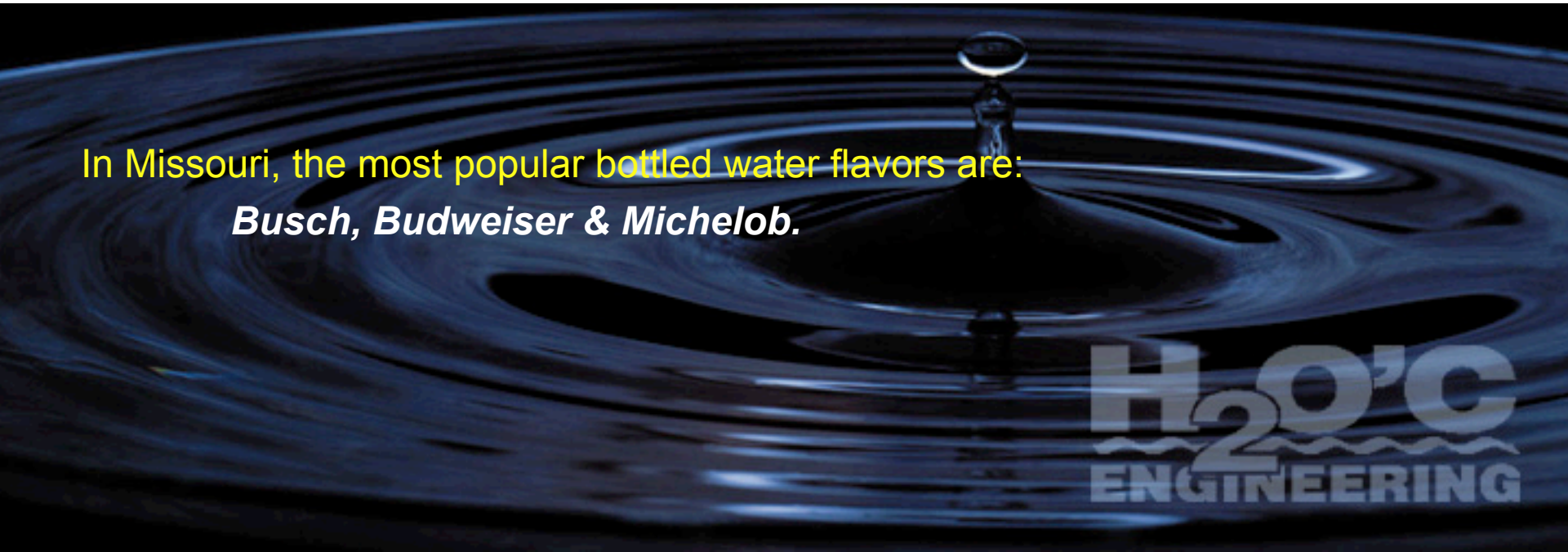
Brand Name: DASANI Flavors

Drink Type: Water

DASANI Flavors: DASANI Grape, DASANI Lemon, DASANI Raspberry and DASANI Strawberry flavored water beverages are naturally flavored and lightly sweetened with sucralose and acesulfame potassium (Ace K) to provide a water alternative without calories or carbohydrates.

Available in the following flavors: Grape, Lemon, Raspberry and Strawberry.

Available in the following location: United States.



Dasani was launched in the UK in January 2004

It was referred to as *bottled spunk* and featured the tagline *can't live without spunk*. In the UK, *spunk* is a euphemism for *semen*.

Dasani was pulled from the UK market in March 2004

In March 2004, a news article revealed that the tap water of the Town of *Sidcup* in Kent was being treated, bottled and sold under the **Dasani** brand name in the UK.

Two weeks later, UK authorities found a concentration of *bromate* in the product. Coca-Cola recalled half a million bottles and pulled the **Dasani** brand from the UK market.

Ironically, the *bromate* was induced by *ozonation* of the tap water's *bromide ion*.

Soon! - with Steroids!

The Coca-Cola Company

The Coca-Cola Company Virtual Vender

Brand Name: DASANI Plus

Drink Type: Water

DASANI Plus: DASANI Plus vitamin-enhanced flavored water beverages have zero calories per serving and come in three varieties:
1) Refresh + Revive: Kiwi Strawberry Flavor has 10% of the reference daily intake (RDI) per serving of Vitamins B3, B6 and B12.

2) Cleanse + Restore: Pomegranate Blackberry Flavor contains 10% of the RDI per serving of Vitamins E, B3, B6 and B12, plus 1 gram of fiber.

3) Defend + Protect: Orange Tangerine Flavor provides 10% of the RDI per serving of Vitamin E and Zinc.

Available in the following location: United States.

Only in America!

H2O'C ENGINEERING

China Water

Reducing the U.S. - China flavor imbalance …

H2O'C ENGINEERING

Targeting Water Drinkers

Kidz Water!

-- not just for yuppies
and old fartz
anymore!

It's fluoridated!

H2O'C ENGINEERING

For Sports Drinkers on the Run!

2007 - Increase in PET production facilities underway

Chemical producers initiate new PET plant construction and undertake existing facility upgrades to meet projected needs.

By 2008, North American PET production capacity was projected to increase by nearly 1.8 million metric tons per year.

Emergency Drinking Water Supply

Missouri:

West Plains

Floods

Cabool

Terrorist Attacks

Gideon

Mushroom Clouds
on Main Street

H2O'C ENGINEERING

Potables of the CCCP

Alkalinity 2100 mg/l

Sulfate 800 mg/l

Chloride 250 mg/l

Calcium 700 mg/l

Magnesium 200 mg/l

Sodium 350 mg/l

Alkalinity 5000 mg/l

Chloride 500 mg/l

Sodium 2100 mg/l

Japan


娃哈哈
饮用纯净水
Wahaha
PURIFIED WATER
FOR DRINKING
把爱随身携带
6 902083 881405


康師傅
饮用矿物质水
多一点 生活更健康
Mineralized Water
净含量:600ml


Laoshan
精品
崂山矿泉水
净含量: 330ml
6 922307 203301


ALT SODA WATER
SALT SODA WATER
YANZHONG
延中
盐汽水
600ml
低热量
喜欢一如既往
净含量:600毫升
NET:600mL


NONGFU SPRING
农夫山泉
饮用天然水
净含量:550ml
中国航天员专用饮用水

Japan

Here's Nestlé!

Thailand


ข้อมูลโภชนาการ
aura
Natural Mineral Water
น้ำแร่ธรรมชาติแม่ริม ตราออรา
ออรา
น้ำแร่ธรรมชาติแม่ริม
Net content 0.5 Litre
50-2-00138-2-0001
THAILAND
ปริมาตรสุทธิ 0.5 ลิตร


NƯỚC KHOÁNG THIÊN NHIÊN
laVie
HÀM LƯỢNG KHOÁNG NHẸ (mg/l)
Tổng chất rắn hòa tan (TDS) 155
laVie®
1,5L
La Vie, nước khoáng thiên nhiên nhẹ và tinh khiết,
được lấy lên từ nguồn nước khoáng sâu
được bảo vệ trong lòng đất, rất tốt cho sức khỏe
của gia đình bạn nhờ có lượng khoáng chất cân bằng.
Để đảm bảo chất lượng tuyệt đối,
La Vie được đóng chai trực tiếp tại nguồn dưới sự giám sát
chất lượng của Nestlé Waters, công ty hàng đầu thế giới
trong lĩnh vực nước đóng chai.
La Vie is bottled directly at source under the quality
supervision of Nestlé Waters.
Best before, see date on the bottle.
Sử dụng trước hạn ghi trên chai
www.laviewater.com


SIAM DRINKING WATER
MANUFACTURED BY
TTC SIAM DRINKING WATER CO.,LTD.
SIAM DRINKING WATER: THE FINEST PURIFIED HYGIENIC DRINKING WATER; USING THE FINE PROCESS OF FILTRATION, REVERSE OSMOSIS, ULTRAVIOLET LIGHT AND OZONATION.
NET CONTENT 599 ml.
มอก.257-2521
น้ำดื่มตรา
สยาม
13-2-00441-2-0001
น้ำดื่มตราสยาม
SIAM™
DRINKING WATER
ปริมาตรสุทธิ 599 มล.

Thailand

Ultravioleted?

H2O'C ENGINEERING

Vietnam


คริสตัล
NSF
น้ำดื่มคริสตัล น้ำดื่มรายเดียว
ในประเทศไทย ที่ได้รับมาตรฐาน
การผลิตน้ำดื่มของสหรัฐอเมริกา
โดยสถาบัน NSF International
คิดจะดื่มน้ำ...ดื่มคริสตัล
CRYSTAL
น้ำดื่ม
ตราคริสตัล
ผลิตโดย
บริษัท เสริมสุข จำกัด (มหาชน)
63 ถ.นนทบุรี-ปทุมธานี
อ.เมือง จ.ปทุมธานี
ปริมาตรสุทธิ 600 มิลลิลิตร
13-1-10824-2-0001
ศูนย์บริการผู้บริโภค โทร. 0-2693-3333
ควรเก็บในที่เย็น ปราศจากกลิ่น
และหลีกเลี่ยงจากแสงแดด
8 851952 350161


Natural Mineral Water
Minéré
Pho Sam Ton Source
Best before : See side of bottle
Net Vol. 0.5 L
น้ำแร่ธรรมชาติจากแหล่งโพธิ์สามต้น
ตรามิเนเร่
Mineral Content :
Calcium แคลเซียม
Magnesium แมกนีเซียม
Potassium โพแทสเซียม
Sodium โซเดียม
Zinc สังกะสี
Fluoride ฟลูออไรด์
Bicarbonate ไบคาร์บอเนต
Sulfate ซัลเฟต
ผลิตโดย
บริษัท เปอรินี้ วิทเทล (ประเทศไทย) จำกัด
เลขที่ 41/1 หมู่ 5 ต.โพธิ์สามต้น
อ.บางปะหัน จ.พระนครศรีอยุธยา
14-2-00336-2-0001
8 850011 200102
น้ำแร่ธรรมชาติ ตรา
มิเนเร่
คุณค่าแร่ธาตุ จากธรรมชาติ
ควรบริโภคก่อนวันที่ระบุข้างขวด
ปริมาตรสุทธิ 0.5 ลิตร
Naturally Better For You ... Everyday
Minéré mineral water is 100% natural and refreshing.
Minéré contains valuable minerals your body needs everyday.
คุณค่าจากธรรมชาติที่คุณดื่มได้
มิเนเร่ น้ำแร่ 100% จากธรรมชาติ อุดมด้วยคุณค่าจากแร่ธาตุต่างๆ
ได้รับการบรรจุขวด ณ แหล่งกำเนิดจากธรรมชาติ
ควรเก็บในที่เย็น ปราศจากกลิ่น
และหลีกเลี่ยง จากแสงแดด
ศูนย์พับริโภคเนสท์เล่
1-800-295588
® Reg. Trademark of Société des Produits Nestlé S.A.


NUOC KHOANG THIEN NHIEN
BITEXCO
Group of Companies
NUỚC KHOÁNG THIÊN NHIÊN
Phân tích, kiểm nghiệm tại trung tâm
FdT - Milano - ITALY (mg/l)
Tổng muối khoáng hòa tan (TDS): 469mg/l
CALCIUM 3.8
MAGNESIUM 1.35
POTASIUM 3.95
NITRATES 2.0
SODIUM 176
IODES 0.4
IRON 0.06
SULPHATES 6.2
FLURIDES 0.15
BICARBONATES 256
SILICA 23
CHRORIDES 90
PH 7.8
CBCL : TC 01/2002/TCCS-BM
Phiếu tiếp nhận CBCL số: 2116/2002/CBTC-YT
Hạn sử dụng in trên thân chai
PET
8 934698 020021
NATURAL MINERAL WATER
Vital®
500ml
ASEM5
HANOI 2004
VIET NAM - ITALIA
Đóng chai trực tiếp tại nguồn khoáng
Đông Cơ - Tiền Hải - Thái Bình
Bởi Công ty S.X kinh doanh XNK Bình Minh
BITEXCO
Vital®
500ml
NƯỚC UỐNG CHÍNH THỨC CỦA HỘI NGHỊ CẤP CAO ASEM 5

Vietnam

French, German, & Swiss companies

often provide treatment of local water sources with:

filtration,

reverse osmosis,

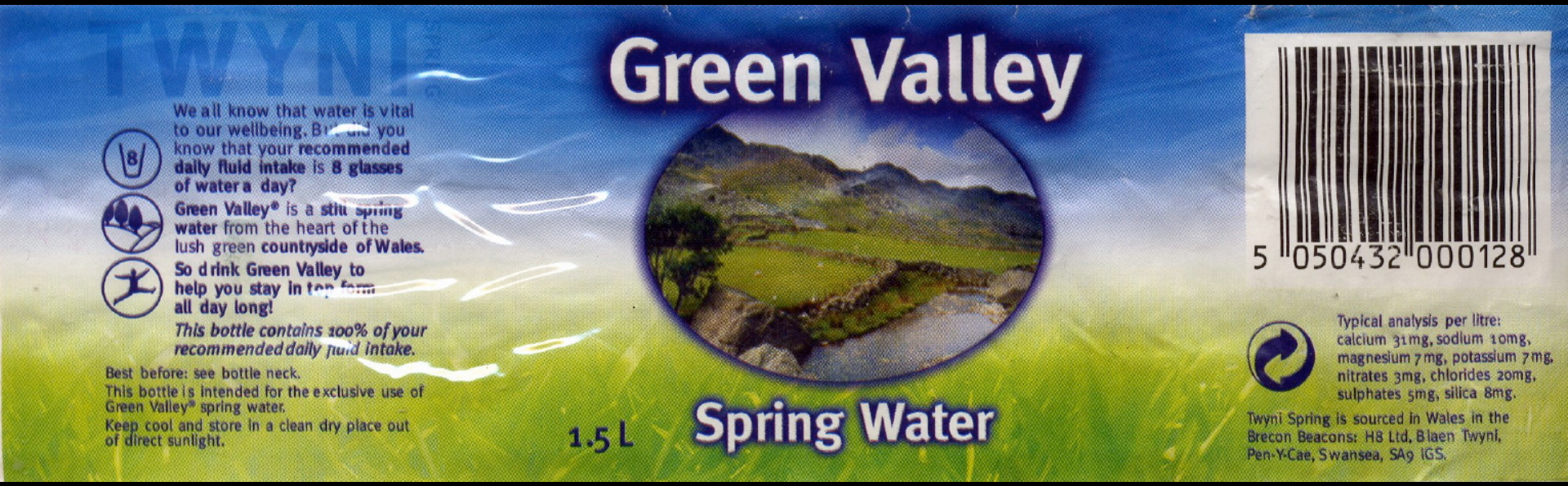
carbon filtration,

ultraviolet irradiation or ozonation.

In Vietnam,

Coca Cola brings you Joy!

Wales - Green Valley



Store … out of direct sunlight!

or it might turn green?

India - Aqua-Fresh

India - Bada Bisleri

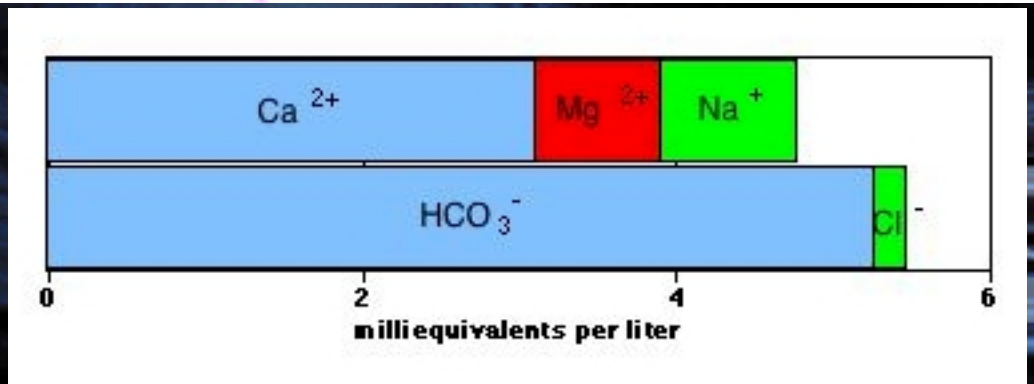
India - Bailey

Do they put 1.2 liters into a 1 liter bottle?
Compressed water?

H2O'C ENGINEERING

India - Himalaya

Mount Everest Mineral Water



India - Oxyrich

Three times healthier?

H2O'C ENGINEERING

India - Sujal

I'm safe

H2O'C ENGINEERING

India - Urja


Urja
PACKAGED DRINKING WATER
1 Litre
U. V. Treated
MANUFACTURED BY :
Kutwal Foods Pvt. Ltd.
Sai Nagar, Andhalgaon, Taluka :Shirur, Dist. Pune.
Ph.:02137- 22312/13
Pune Ph. : 020-4376929, 4372554.
NET CONTENTS : 1 Litre
BATCH NO.
MFD.:
MAXIMUM RETAIL PRICE
INCLUSIVE OF ALL TAXES
PET
PLEASE CRUSH THE BOTTLE AFTER USE

© *China Photo/Reuters/Corbis* - Haikou, China

Water Bottles: Landfill & Litter

2.4 million metric tons of PET (polyethylene terepthalate), derived from crude oil, are used for bottles annually.

In the U.S., 86% goes to landfill or becomes litter.

U.S. consumes

1.5 million barrels of oil annually in production of disposable water bottles.

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U.S. PET Production - a growing bubble?

North America's largest PET plant,

430,000 metric tons annually

due to start-up in 2008 in Decatur, Alabama

Mossi and Ghisolfi Group plan

New 800,000 metric ton plant

somewhere in U.S.

Plus 200,000 metric tons

expansion in West Virginia and Mexico

Eastman Chemical opened a

350,000 metric ton plant

in South Carolina in 2007

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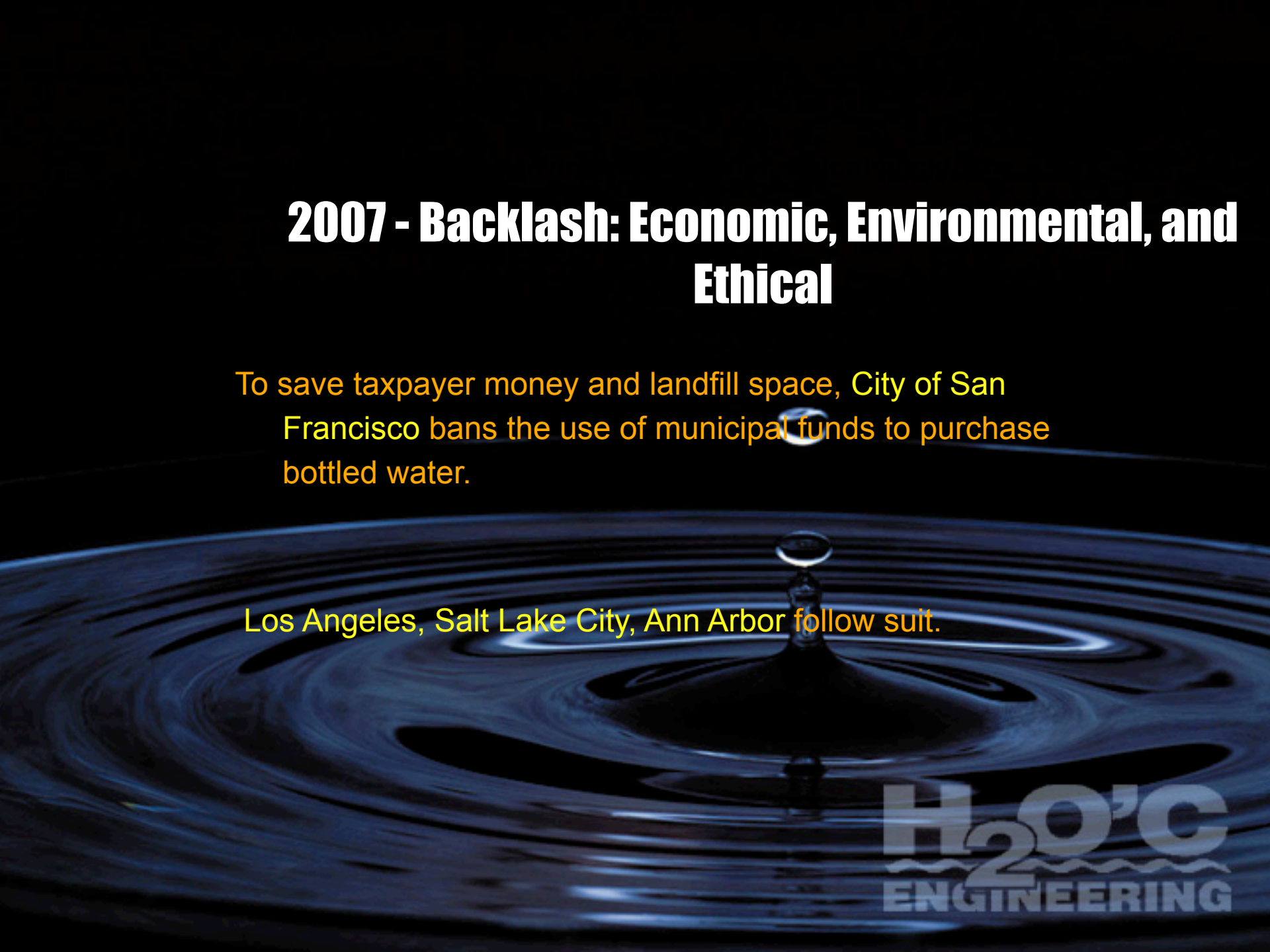
2007 - Backlash: Economic, Environmental, and Ethical

To save taxpayer money and landfill space, City of San Francisco bans the use of municipal funds to purchase bottled water.

Los Angeles, Salt Lake City, Ann Arbor follow suit.



City ban will help stem global warming, save taxpayer money

Environmental impact of making, hauling, disposing of bottles

Over a billion bottles end up in California's landfills each year

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2007 Chez Panisse

Berkeley, California

stopped serving bottled water
citing environmental impacts

The Bottled Water *BS Alarm*

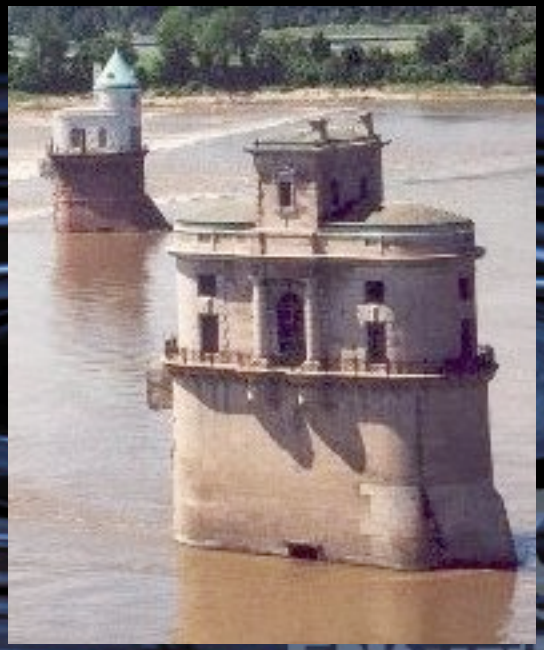
has also gone off in:

San Francisco	Seattle
Los Angeles	Minneapolis
Salt Lake City	New York City
Ann Arbor	Boston
St. Louis	Santa Barbara
Berkeley	San Leandro, …

City of St. Louis

Starting this spring, City Hall will no longer buy bottled water for employees and plans to cancel the roughly $20,000 it has in contracts with area vendors.

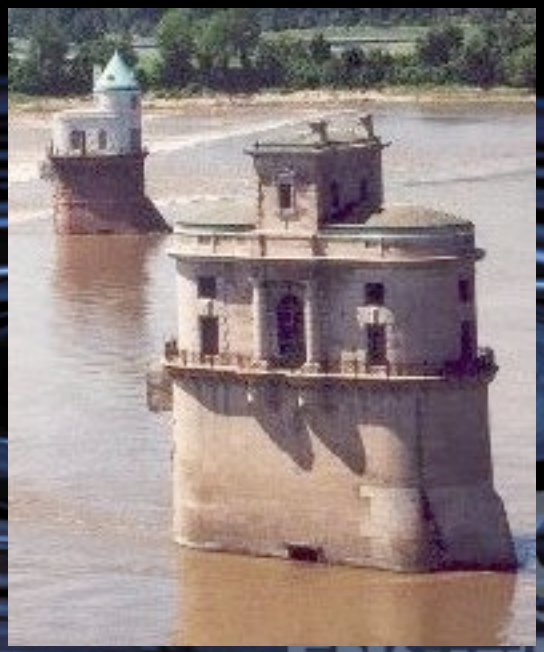
St. Louis sells water from the city's treatment plant to PepsiCo's north St. Louis facility, which filters and sells it as Aquafina for $1.25 a bottle.



City of St. Louis

Chosen as 2007's
"Best Tasting City Water in America"
by the U.S. Conference of Mayors

- Blind taste test
- 93 entries



O'C ENGINEERING

Swiss Cost Evaluation: Economics of Tap vs. Bottled Mineral Water

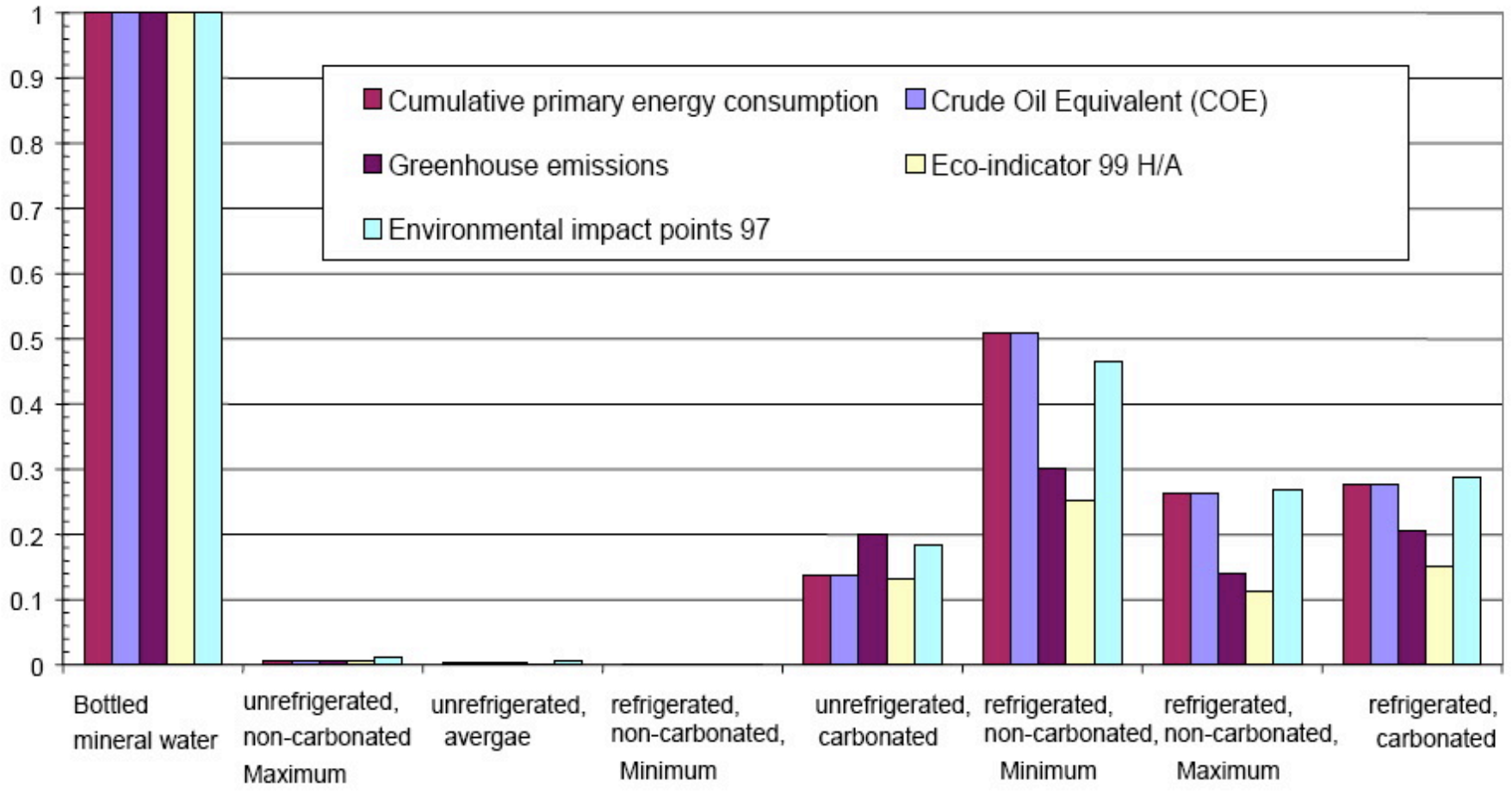


Fig. 4.2 Relative Comparison of the Environmental Impact of Bottled Mineral Water vs. Tap Water. The height of the bar indicates the environmental impact of the tap water variants as compared to the corresponding variant for bottled mineral water.

2007 - Bottled Water bubble burst creates tsunami of rhetoric

An International Bottled Water Association (IBWA) spokesman condemns

U.S. environmental activists

for unfairly criticizing bottled water sales.

IBWA Decries Bottled Water 'Activism'

"During the past year, critics of bottled water have become more organized and active, instituting new methods and tactics to attack the industry."

Corporate Accountability International (CAI)

"…even acknowledges … the support it had from a number of faith-based organizations …"

"They are exploiting the current political climate that supports environmental issues to demonize the bottled water industry."

"… arm yourself with the facts at www.bottledwater.org"

Arguments re: Bottled Water

Aficionado

I can taste the difference!

I am sensitive!

It is better for you than soda pop!

You can recycle the plastic!

I want to protect my family's health!

It's convenient!

Cynic

Ever tried a taste test?

Can you smell plastic?

So is tap water!

Americans don't recycle!

From what?

(Do you know what is in the bottled water?)

How hard is it to fill a bottle from the tap?

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TheWaterProject.org

What's 'wrong' with bottled water?

Bottled Water is Luxury In the face of the needs of real people, suffering the real effects of water scarcity, luxury should not be our choice.

Bottle Water is Wasteful Most luxuries are, but bottled water has enormous costs that rival some of the biggest offenders.

The Money Spent Can Be Used Better Elsewhere. Waste not, and others will want less. Your resources can change someone's life!

H2O'C ENGINEERING

Fiji Water - 'distant and exotic'

Manufacture of a 1 kilogram bottle requires:

6.7 kilograms of water and

0.85 kilograms of fossil fuel

Shipment (8700 km) to U.S. results in:

0.56 kilogram of emissions

Retail Cost: $1.50

After Evian, Fiji is #2 in premium bottled water

Lighterfootstep.com

five reasons not to drink bottled water

- Bottled water isn't a good value
- It is no healthier than tap water
- Bottled water creates trash, litter, landfill
- Bottled water means less attention to public systems
- Leads to the corporatization of water

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Recycle your PET?

Coca-Cola reacts to critics

will build world's largest PET recycling plant

100 million lbs/year - Spartanburg, N.C.

45,000 metric tons

Coke claims markets in 200 countries

Goal

to recycle 100% of its U.S. PET bottles

How? --- by establishing

recycling centers throughout the U.S.

promoting *curbside collection* of PET

International Bottled Water Association

Bottled water consumers' fears:

- aging municipal distribution systems and longer-term quality of municipal water,
- health issues related to the use of chlorine and chloramine,
- taste of chlorine,
- fear of contamination from chemical spills, organic substances, or sabotage,
- health concerns about consumption of soft drinks.

International Bottled Water Association

IBWA is now

Pro-choice: bottled water is about beverage choice

Environmental: recycling must focus on all packaging

International Bottled Water Association

IBWA:

is launching a comprehensive ad campaign to respond to the growing threat from activist groups

members are urged to stay alert to critics, misinformation

develop solid relationships with community leaders and elected officials

counter the misinformation that activists may offer

www.bottledwater.org

H2O'C ENGINEERING

2008 - IBWA Turns 'Green'

Nestle

- will use 30% lighter plastic bottles
- will use 30% smaller labels; *Eco-Shaped* bottled
- bottles will be 100% recyclable and more *compactable*
- is building plants that are *green-building certified*
- will use trucks that are well-maintained, more efficient
- is looking at hybrid forms of transportation

IBWA

- joined the *National Recycling Partnership*
- will lobby govt. officials to get *efficient* recycling programs
- took full-page ads: NY Times, SF Chronicle

2008 - IBWA Turns 'Green'

IBWA favors beverage choice

will promote recycling advocacy and education

Bottled water 'taxes' (deposits) targeting the bottled water industry are '*missing broad opportunities to put in place sustainable, long-term protective policies that do not discourage the choice of healthy bottled water.*'

'We don't market to disparage or undermine consumer confidence in tap water. Ours is a beverage choice, not a tap water replacement'

'It's not like people will switch from bottled water to tap water. They'll choose another beverage, or they'll put something in a cup that's discarded in the waste stream.' (V.P. Communications, IBWA)

U.S. Plastics Recycling Rates Decline

"Plastics don't actually *recycle*. Instead, they are reprocessed into secondary (usually non-recyclable) products due to their structural/chemical sensitivity, the extremely low cost of virgin plastics, poor product design and materials policy." (International Plastics Task Force).

Despite curbside recycling, the PET recycle rate dropped to 11-year low of 22% in 2001. With the discard of contaminated material, the PET *utilization* rate was 18%.

H2O'C ENGINEERING

Recycling Recognized as Significant Cost for Municipalities

"The city's recycling program will be drastically scaled back starting today, as the Bloomberg administration, in a money-saving move, halts the recycling of glass and plastics." (New York Times, July 1, 2002).

It takes about 3-5 times the number of personnel to recycle as to landfill.

2008 - IBWA Turns 'Green'

Public Water Supplies subject to USEPA regulations:
83 Maximum Contaminant Level (MCL) parameters

Bottled water (Food Product) regulated by
Food and Drug Administration (FDA)

FDA sets Standards of Quality (SOQ) for food products

Operationally, bottlers may test for:
coliform bacteria, ozone residual, conductivity, pH, fluoride

H2O'C ENGINEERING

U. S. Conference of Mayors - 2008

considers resolution on purchase of bottled water

SUPPORTING MUNICIPAL WATER SYSTEMS

WHEREAS, the United States' municipal water systems are among the finest in the world; and

WHEREAS, high quality, safe drinking water is already available at most public locations; and

WHEREAS, mayors are responsible for delivering safe and affordable water to our citizens; and

WHEREAS, bottled water is regulated by the FDA and municipal tap water is regulated by the EPA and has more stringent requirements for testing; and …

H2O'C ENGINEERING

U. S. Conference of Mayors - 2008

WHEREAS, local governments invest approximately $82 billion a year to provide water and sewer services; and

WHEREAS, bottled water often costs more than an equivalent volume of gasoline, equivalent to 1,000 to 10,000 times more than tap water; and

WHEREAS, up to 40% of bottled water on the market comes from municipal water systems and the bottled water industry generated $15 billion in revenues in 2006 from U.S. consumers; and

WHEREAS, bottled water often travels many miles from the source, resulting in the burning of massive amounts of fossil fuels, releasing CO2 and other pollution into the atmosphere; and

WHEREAS, plastic water bottles are one of the fastest growing sources of municipal waste; and …

H2O'C ENGINEERING

U. S. Conference of Mayors - 2008

WHEREAS, in the U.S. the production of plastic bottles for bottled water currently requires the energy equivalent of more than 17 million barrels of oil per year – enough to generate fuel for over a million cars for a year – and generates more than 2.5 million tons of carbon dioxide; and

WHEREAS, we applaud the US Conference of Mayors for its National City Water Taste Test, which recognizes all of the great work municipal water systems do for its residents on a daily basis, year after year; and

WHEREAS, the US Conference of Mayors, per Resolution #90 adopted in June 2007, has compiled much information regarding the importance of municipal water and the impact of bottled water on municipal waste.

WHEREAS, the evidence suggests that banning bottled water from government use highlights the importance of municipal water and decreases the impact of bottled water on municipal waste.

H2O'C ENGINEERING

U. S. Conference of Mayors - 2008

NOW, THEREFORE, BE IT RESOLVED, that the US Conference of Mayors encourages cities to phase out, where feasible, government use of bottled water and promote the importance of municipal water.

Resolution 70 Submitted by:

The Honorable Gavin Newsom
Mayor of San Francisco

The Honorable Michael Bloomberg
Mayor of New York City

The Honorable Thomas Menino
Mayor of Boston

The Honorable Laurel Lunt Prussing
Mayor of Urbana

The Honorable Martin Chavez
Mayor of Albuquerque

The Honorable Dan Coody
Mayor of Fayetteville

The Honorable Will Wynn
Mayor of Austin

The Honorable R.T. Rybak
Mayor of Minneapolis

The Honorable David Cicilline
Mayor of Providence

The Honorable Joseph A. Curtatone
Mayor of Somerville

The Honorable David Cicilline
Mayor of Providence

The Honorable Richard M. Daley
Mayor of Chicago

The Honorable Marty Blum
Mayor of Santa Barbara

The Honorable Michael Nutter
Mayor of Philadelphia

The Honorable Manuel Diaz
Mayor of Miami

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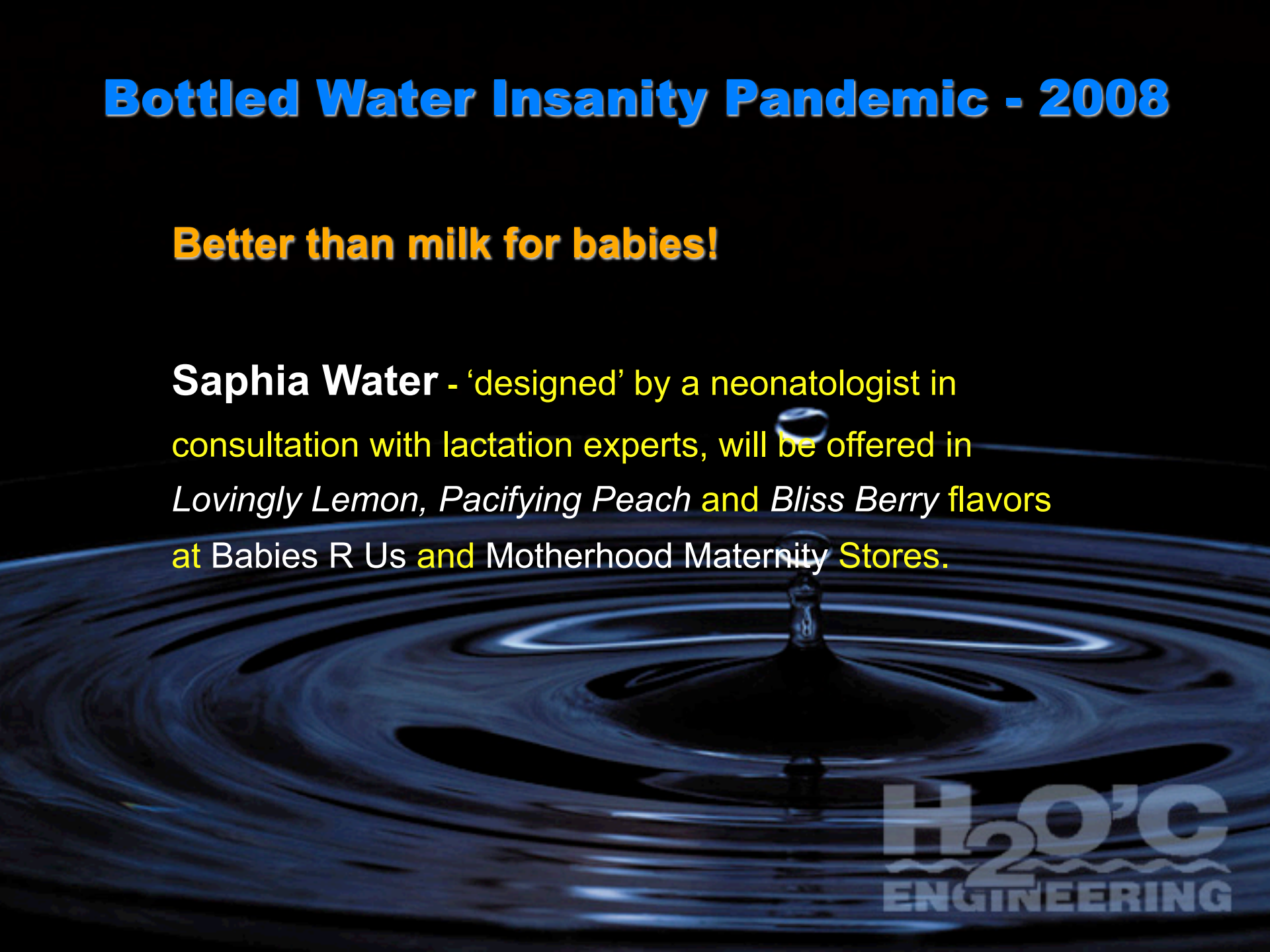
Bottled Water Insanity Pandemic - 2008

Better than milk for babies!

Saphia Water - 'designed' by a neonatologist in consultation with lactation experts, will be offered in *Lovingly Lemon, Pacifying Peach* and *Bliss Berry* flavors at Babies R Us and Motherhood Maternity Stores.



Saphia™ Water for Smart Women Expecting More

Saphia Water is the first enhanced water created specifically to respond to obstetricians' universal prescription for pregnant women and breastfeeding mothers to drink the equivalent of at least eight, eight-ounce glasses of healthy water daily.

At $45/case, that's $1,832 for 9 months

£ove = £ 21.99

is all you need …?

Bottled Water Insanity Pandemic - 2008

When your water sommelier brings you a **Swarovski chrystal-studded bottle**, it will contain **Bling h²o**, the most expensive water in the world.

Offered for an exclusive market *'where water is the new wine'*, this $38 per bottle potable is reputedly Paris Hilton's choice for her Chihuahua.

Your on-line price for the limited edition 'Christmas' Bling (750 ml in a crimson and Peridot green bottle) is $40.

Bling h²o is also available in

'convenient' plastic bottles.

H2O'C ENGINEERING

$55 per bottle - girl not included

Bottled Water Insanity Pandemic - 2008

Sensing the challenge, H_2O'C Engineering is in the process of developing a highly advanced water product having the potential to sell for even more than all other competitors.

Condensed in hydrostatically-fused borosilicate capillaries,

H_3O'C bi-ionic electroneutral polywater

promises to be a *powerdrink* capable of delivering steroids and male enhancement products in undetectable form.

In addition to saving marriages, *polywater* has already shown its capability for curing cancer and minimizing the effects of the common cold.

What's in it? Don't ask; we won't tell.

But, if you *really* love your family ... !

H2O'C ENGINEERING

Pharmaceuticals

in Water and Wastewater

Recreational Drugs in Wastewater

- Oregon State University drug-tested influent at 40 wastewater treatment plants around the country
- A "city with a gambling industry" used five times more methamphetamines than most
- A "fairly affluent community" scored low for everything except cocaine
- Cocaine and ecstasy levels peak on the weekends, but the meth and prescription drugs are constant

H2O'C ENGINEERING

Over-the-Counter Drugs in Drinking Water

Caffeine found at the highest concentration of all drugs tested by Philadelphia Water

If you drink eight glasses of water a day for more than 1,200 years, you'll get the amount of caffeine in a single cup of coffee (~100mg)

Over-the-Counter Drugs in Drinking Water

If you drink eight glasses of water a day for more than 40,000 years, you'll get the amount of acetaminophen in a single infant dose (80 mg) of Tylenol.

There is currently no indication that such extremely low concentrations pose any public health risk.

H2O ENGINEERING

Pharmaceuticals

"Ask your doctor if_____is right for you"…
take pills… pee 'em out (& dispose extras)…
toilet… wastewater plant… river… drinking water
treatment plant intake… tap

Concentrations in drinking water are in the parts-per-bazillion range.

The real story here is:

1) How amazing the detection methods of modern analytical equipment are.

2) This stuff that we make persists and is incorporated into the environment.

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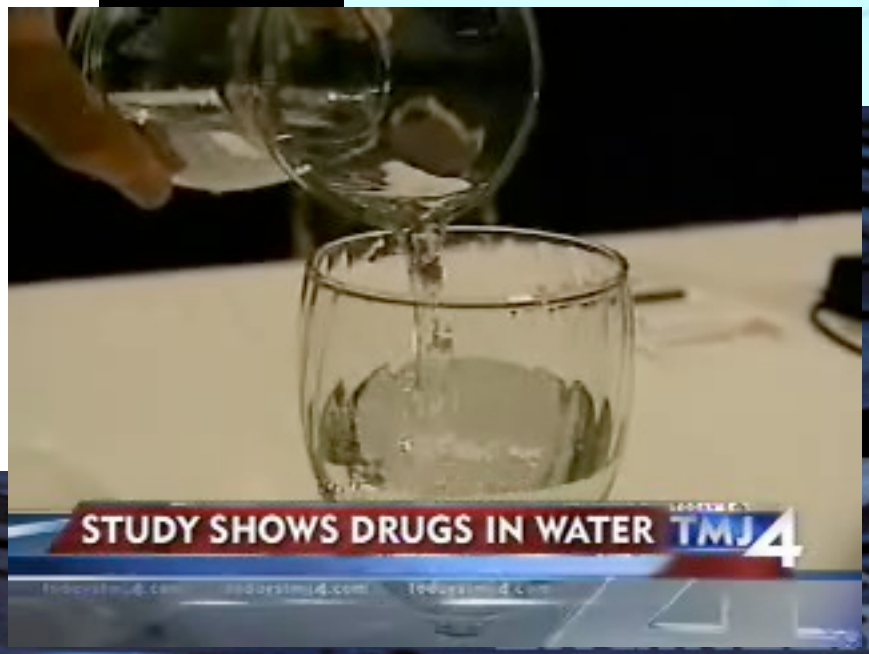
Great Headlines



Bottled Water Insanity Pandemic - 2008

Toilet to Tap?

There are no more orange groves in Orange County, California.

Instead, population grows and water is in increasingly short supply. Happily, there is an ever-increasing flow of *wastewater* (a.k.a., *sewage*).

A proposed $481m *groundwater replenishment system* employing microfiltration, reverse osmosis and UV-peroxide oxidation will make wastewater *'as pure as distilled water'*...

H2O'C ENGINEERING

BPA in Baby Bottles

March 6, 2009 - San Francisco Chronicle:

... six major companies have agreed to stop selling hard-plastic baby bottles containing bisphenol A, an industrial chemical suspected of harming human development ...

... some of the companies have been making bisphenol A-free alternatives, including old-fashioned glass baby bottles ...

Studies in lab animals indicate that even small amounts of bisphenol A can damage brain and reproductive systems, alter mammary and prostate glands and lead to heart disease, obesity and diabetes.

H2O'C ENGINEERING

Leaching from Plastic Bottles ?

- **Mineral water packaged in plastic contains roughly twice the amount of estrogen mimics compared with water sold in glass ...**
- **Estrogenic compounds have potential adverse health effects ...**
- **Increased activity in 12 of 20, most of which relied on PET bottles**
- **Female snails, raised in PET bottles, produced more than double the number of embryos compared with snails raised in glass bottles.**
- ***Environ. Sci. Poll. Research, DOI: 10.1007/s11356-009-0107-7***

Water in a glass?

H_2O'C Library

www.h2oc.com

john@h2oc.com
877-22-WATER


H2O'C
ENGINEERING